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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,904	07/05/2001	Tatsuo Fukui	109686	1427
25944	7590	12/05/2003	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			STOCK JR, GORDON J	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/897,904	Applicant(s) FUKUI, TATSUO	
	Examiner Gordon J Stock	Art Unit 2877	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
     a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Due to “new matter,” and 35 U.S.C. 112 second paragraph rejections that have been found in relation to the claims of the amendment filed on April 30, 2003 the final rejection of July 16, 2003 has been withdrawn. Subsequently, the after final amendments of October 16, 2003 and November 17, 2003 have not been entered. The following action is in response to the amendment filed on April 30, 2003. In addition, there was reconsideration of the **Sugaya et al. (5,754,299)** in view of the claim rejections as set forth in the withdrawn final rejection of July 16, 2003 and in view of the new matter and 35 U.S.C. 112 second paragraph issues.

#### *Drawings*

2. Applicant’s arguments, see page 8, filed 30 April 2003, with respect to Figure 1 have been fully considered and are persuasive. The objections to Figure 1 have been withdrawn.

#### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 4, 6, 7, 8, and 9** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As to **claims 4, 6, 7, 8** the phrases “with respect to the axis which passes through the center of the visual field and which is perpendicular to a direction in which the positional deviation is detected” and “the axis which passes through the center of the visual field

and which is perpendicular to a direction in which the positional deviation is detected” and “the axis which passes through the center of said image field and which is perpendicular to a detecting direction of said positional deviation in alignment” appear to be new matter, for the disclosure on page 6, lines 18-20 and page 18 lines 10-15 merely mentions “the center of the visual field.” As to **claims 7 and 9**, the term Q as defined with the “n is the number of lines (spaces) in the selected pattern area” is new matter, for Q as defined in the specification has a factor of  $1/7$  and not  $1/n$  as stated on page 15. And for **claims 6-7** “at least one set of patterns which are symmetric with respect to the center of the image field” appear to be new matter, for Fig. 4a does not specifically disclose symmetry in respect to the image field.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 4, 6, 7, 8, and 9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to **claims 4, 6, 7, 8** see the phrases pointed out above. Specifically, “a direction in which the positional deviation is detected” and “which is perpendicular to a detecting direction of said positional deviation in alignment” are indefinite for it unclear as to what direction or axis that the term is referring, for there are positional deviations in the x and y direction yet the detection is done by the imaging device or substantially on the z-axis and/or optical axis. Clarification is required.

For **claim 6**, additionally, the phrase on line 6 “may have ...” is indefinite, for it is uncertain if the recitation following “may have ...” has to be part of the claimed invention.

For **claim 7**, additionally, the phrase on line 14 “may be ...” is indefinite, for it is uncertain if the recitation following “may be ...” has to be part of the claimed invention.

For **claim 8**, additionally, the phrase “may be ...” is indefinite, for it is uncertain if the recitation following “may be ...” has to be part of the claimed invention.

For **claim 9**, the phrase “may be zero” is indefinite, for it is uncertain if the Q value has to be zero.

Subsequently, in the following rejections, the Examiner has not treated the “may have” and “may be” recitations for their merits. They have not been given patentable weight.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1, 2, and 8** are rejected under 35 U.S.C. 102(b) as being anticipated by **Takahiko (JP 08-115874)** (cited by applicant--translation).

As for **claims 1, 2, and 8**, Takahiko in a position deviation measuring optical system discloses the following: an irradiation optical system for irradiating the measurement mark with a beam of irradiation; image forming optical system; an imaging device for capturing the image of measurement mark; an image processing device for measuring positional deviation in alignment between the first mark and second mark; an image field adjustment mechanism for adjusting, in a plane perpendicular to the optical axis, a position of an image field for capturing the image of the measurement mark by said imaging device, while maintaining a size of image

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field (Drawing 1; Drawing 6; Drawing 7; page 2, paragraphs 8-11; page 3, paragraphs 13 and 15); wherein said image field position adjustment mechanism comprises a field stop provided on said irradiation optical system; an imaging device position adjustment mechanism for adjusting a position of said imaging device; said field stop and an imaging surface of said imaging device are disposed in optically conjugate positions, and said imaging device position adjustment mechanism adjusts the position of said imaging device in accordance with the field stop positional adjustment effected by said field stop position adjustment mechanism (Drawing 1; 6a; 54; 53; 8; 18; 12 and 13; page 3, paragraphs 13-18); wherein said image field position is so adjusted that at least one set of areas which are symmetric with respect to the center of the image field is selected (Drawings 3-4, 7; page 1, paragraph 5; page 3, paragraphs 16-17).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 1, 2, and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sugaya et al. (5,754,299)**.

As for **claims 1-2, and 8**, Sugaya teaches in an inspection apparatus for alignment: an irradiation optical system; an image forming optical system; an imaging device for capturing the image; an image processing device for measuring positional deviation; an image field position adjustment mechanism; wherein said image field position adjustment mechanism comprises a

field stop provided on said irradiation optical system, a field stop position adjustment mechanism for adjusting a position of said field stop, in a plane perpendicular to the optical axis, and an imaging device position adjustment mechanism for adjusting a position of said imaging device, said field stop and an imaging surface of said imaging device are disposed in optically conjugate positions, and said imaging device position adjustment mechanism adjusts the position of said imaging device in accordance with the field stop positional adjustment effected by said field stop position adjustment mechanism (col. 6, lines 50-67; col. 7, lines 1-20; Fig. 19; cols. 24-25; col. 26; lines 1-10); wherein said image field position is so adjusted that at least one set of areas which are symmetric with respect to the center of the image field is selected (col. 32, lines 1-25). As for marks, Sugaya discloses street and line marks for a wafer mark (Fig. 20); and discloses that the embodiment may be used for overlay using a main scale and vernier (col. 26, lines 65-67; col. 27, lines 1-10). Therefore, it would be obvious to one skilled in the art at the time the invention that a first mark and second mark comprising a street and line pattern for overlay measurements utilize a mark comprising a first mark, main scale, and a second mark, a vernier.

11. **Claims 3, 5, 6, 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sugaya et al. (5,754,299)** in evidence of **Iwanaga et al. (5,920,398)**.

As for **claims 3, 5, 6, 7, and 9** Sugaya discloses everything as above (see **claim 1**). In addition, Sugaya discloses adjusting field position on the basis of an asymmetric focus characteristic of the pattern image; wherein said image field position is so adjusted that the focus characteristic on a signal intensity difference at a stepped portion on both sides is used (Figs. 3-6; Figs. 8-12; Figs. 14-17; col. 4, lines 35-60; col. 5, lines 1-30; col. 13; lines 35-67; col. 14, lines 1-45; col. 15, lines 15-67; col. 17, lines 40-67). As for claim 7, see figure 8 and col. 17, lines 1-

30). The asymmetry index utilizes voltage rather than intensity, but it is well known that voltage is proportional to intensity. Therefore, it would be obvious to one skilled in the art at the time the invention was made that the asymmetry index was the focus characteristic value for voltage is proportional to intensity of signal. As for **claim 9**, refer to **claim 7** above and for adjustment steps 1-3 refer to broadly cols. 18-19 and specifically, col. 19, lines 25-40; col. 23, lines 10-40. In addition, Iwanaga in a surface position detecting method teaches using an asymmetric focus curve to calculate focus correction (col. 12, lines 5-25).

***Allowable Subject Matter***

12. **Claim 4** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph and 35 U.S.C. 112 first paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

As to **claim 4**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical positional deviation detecting apparatus adjusts the image field position so that the asymmetric focus characteristic exhibits a characteristic that is symmetric, in combination with the rest of the limitations of **claim 4**.

***Response to Arguments***

13. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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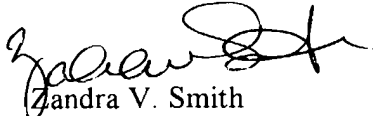
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December 2, 2003

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Zandra V. Smith  
Primary Examiner  
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